16.0 MITIGATION MEASURES

This chapter discusses potential measures to mitigate impacts identified in the CT EIS analysis. Potential mitigation measures are described in three groups: those which will be taken by the DOE prior to conveyance or transfer, recommended mitigations, and resource-specific mitigations.

16.1 Introduction

The regulations promulgated by the Council on Environmental Quality (CEQ) to implement the procedural provisions of the NEPA (40 Code of Federal Regulations [CFR] 1500-1508) require that an EIS include a discussion of appropriate mitigation measures (40 CFR Part 1502.14[f], 40 CFR Part 1502.16[h]). The term "mitigation" includes the following:

- Avoiding an impact by not taking an action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of an action and its implementation
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments (40 CFR Part 1508.20)

This chapter describes potential mitigation measures in three categories: (1) mitigations prior to conveyance or transfer, (2) recommended mitigations, and (3) also potential resource-specific mitigations. These mitigation measures address the range of potential impacts of transferring tracts for natural areas; cultural preservation; and commercial, residential, and industrial development scenarios. Tract activities include existing efforts and controls such as regulations, policies, contractual requirements, and administrative procedures to mitigate impacts. The existing programs and controls are too numerous to list completely. Examples include the Fire Protection Program, Pollution Prevention and Waste Minimization Programs, Water and Energy Conservation Programs, and the Threatened and Endangered Species Habitat Management Plan. These are discussed in detail in the LANL SWEIS (DOE 1999c).

Any new or additional mitigation measures that could further reduce the impacts identified in Chapter 5 though Chapter 14 are discussed in the following sections. The description of these measures does not constitute a commitment by the DOE or the land recipient to undertake any of them. Any such commitments would be reflected in any Records of Decision (RODs) following the publication of the Final CT EIS, with a more detailed description and implementation plan in one or more mitigation action plans to be published following the ROD(s).

16.2 Mitigations Prior to Conveyance or Transfer

Prior to conveyance or transfer of any of the land tracts, the DOE will take the following actions:

- Initiate cultural resource consultations with the affected Pueblos and Tribal Nations and the State Historic Preservation Office(r), and complete consultations regarding threatened or endangered species and their habitats with U.S. Fish and Wildlife Service (USFWS).

- Consistent with the provisions of Public Law (PL) 105-119, in the case of conveyance of land tracts to the County, the DOE may include deed restrictions precluding any development within the 100-year floodplains[1] or wetlands[2]. The DOE also may include other deed restrictions, notices, and similar land use controls as deemed appropriate and necessary that are protective of human health and safety.
- Relocate any environmental monitoring stations after consultation with State regulators, as appropriate.

The DOE will consider inclusion of additional land use controls within the deed mechanism at the time of conveyance of tracts that would be protective of sensitive resources in a manner consistent with the DOE's consultation results.

16.3 Recommended Mitigations

This section describes recommended mitigations involving DOE discussions, consultations, and similar planning activities with other organizations and land recipients.

The DOE should coordinate consultations with the New Mexico State Historic Preservation Office(r), the Advisory Council on Historic Preservation, the receiving parties, and other interested agencies and parties to ensure adequate consideration of impacts on cultural resources resulting from the conveyance and transfer of the subject tracts from the responsibility and protection of the DOE. The goal of these consultations would be a formal Memorandum of Agreement (MOA) addressing the impacts of the potential loss of certain cultural resource protections and DOE responsibilities on the subject tracts and defining specific procedures and responsibilities for managing cultural resource concerns upon transfer to the receiving parties. These could include covenants to be developed for the protection of various cultural resources.

Specific issues to be discussed would include, but would not be limited to the following:

- Minimize impacts to cultural resources in and adjacent to the subject tracts from the loss of responsibility and protection of the DOE by delegating cultural resource preservation responsibilities and developing a process that parallels existing protections and procedures.
- Minimize the adverse effect of the transfer or conveyance of National Register of Historic Places (NRHP)-eligible properties out of the responsibility and protection of the DOE by including adequate restrictions or conditions to ensure preservation of the properties' significant historic features.
- Minimize potential impacts to historic buildings from the loss of DOE responsibility and protection by completing the identification and evaluation effort for all buildings in the subject tracts; ensuring that

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[1] Executive Order 11988, "Floodplain Management," states that (under section 3(d)):

"When property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the Federal Agency shall (1) reference in the conveyance those uses that are restricted under identified Federal, State, or local floodplain regulations; and (2) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance."

[2] Executive Order 11990, "Protection of Wetlands," states that (under Section 4):

"When federally-owned wetlands or portions of wetlands are proposed for lease…or disposal to non-Federal public or private parties, the Federal agency shall: (a) reference in the conveyance those uses that are restricted under Federal, State, or local wetlands regulations; and (b) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successor, except where prohibited by law; or (c) withhold the properties from disposal."

NRHP-eligible buildings continue to be used (to the maximum extent feasible) and maintained in a manner that preserves their historical value; and exploring the reuse of other NRHP-eligible buildings for activities that must be relocated.

- Minimize potential impacts to traditional cultural properties (TCPs) by completing consultations to identify the presence and importance of these resources within the subject tracts, identifying any potential impacts of conveyance or transfer on access to TCPs in adjacent areas, and exploring methods to avoid disturbance of TCPs and traditional users.
- Minimize potential impacts from the loss of DOE protections and guarantees regarding the preservation of Native American sacred sites and the rights of Native Americans to practice traditional religions on the subject tracts under the *American Indian Religious Freedom Act* and Executive Order 13007, "Indian Sacred Sites," by allowing for the continuation of any traditional religious practices.
- Minimize the potential impacts from the loss of DOE protection for archaeological resources on these lands under the *Archaeological Resource Protection Act* by providing for similar requirements for permitting prior to excavation of archaeological sites, the disposition of archaeological materials and penalties for unauthorized excavation, vandalism, and trafficking of archaeological materials.
- Minimize the potential impacts from the loss of DOE responsibility for the protection and disposition of Native American sacred objects, objects of cultural patrimony, and funerary objects under *the Native American Graves Protection and Repatriation Act* by establishing agreements outlining similar procedures for addressing the inadvertent discovery of Native American human remains or funerary objects and their disposition.
- Provide for the loss of DOE responsibility for the curation of archaeological and cultural resource collections from these tracts under 36 CFR 79 by assigning these responsibilities and contracting for curation services.
- Develop a natural resources management plan that is integrated and developed with the natural resource management plans of other adjacent land management agencies.
- Continue involvement in the roles and responsibilities that have been established with the townsite of Los Alamos, County of Los Alamos, State of New Mexico, U.S. Department of Agriculture, and U.S. Forest Service (USFS) for emergency response. This includes the notification processes for each of the response groups and mutual aid in the event of an emergency.
- Explore the establishment of a proactive means toward developing future use options for transferred properties, in accordance with State law and the County Charter. Participation in a Future Use Options Logistics and Support Working Group with the USFS, the New Mexico Environment Department (NMED), Bureau of Land Management (BLM), Pueblos, and local citizen groups would be encouraged. Public involvement is encouraged through the Citizens Advisory Board and would be instrumental in providing interim recommendations on future land use options.

- Coordinate with local jurisdictions, Native Americans, and State officials to explore methods to maintain a rigorous environmental review and protection review process for future development or other activities.

16.4 Potential Resource-Specific Mitigations

Resource-specific mitigation issues are discussed in the following sections. Unless otherwise noted, the analyses in Chapter 5 through Chapter 14 assume that these measures would not be implemented by the recipients. The following potential mitigations are recommendations for action by the recipients and the DOE.

16.4.1 Land Use

The following potential mitigation measures for land use impacts were identified.

- Explore means to compensate for the loss of recreational use on tracts transferred for cultural preservation and development.
- Explore solutions to overcome impacts to access routes to adjacent lands, access routes needed for fire and emergency vehicles, and access routes for emergency egress for Los Alamos residents.
- Explore the necessary means to reduce wildfire and seismic hazards.
- Explore coordinating closely with local groups to have incompatible uses and developments controlled.
- Explore limiting commercial and industrial development by limiting operations to those with a low level of risk consistent with surrounding neighborhoods.
- Establish a regional program to promote conservation, pollution prevention, and waste avoidance efforts.
- Explore methods of providing for additional municipal services including working with site developers.

16.4.1.1 Environmental Restoration

No potential impacts requiring mitigation were identified for environmental restoration.

16.4.2 Transportation

The potential mitigation measure to transportation impacts was to explore the installation of traffic signals and minor lane changes (restriping) to better manage increases in traffic volumes. Also consideration of new roads, road widening, and bridges would be included. The particular improvements and their locations would be identified upon implementation of specific land use scenarios at each land tract.

16.4.3 Infrastructure

The following potential mitigation measures for infrastructure and utilities impacts were identified.

- The predicted shortfalls in electrical power supply, water supply, and wastewater treatment capability should be addressed in two parallel efforts: (1) seek additional resources; and (2) establish conservation programs to avoid waste and encourage recycling.
- The County and the DOE should explore a means to obtain additional water rights to compensate for the anticipated shortage. In the meantime, both the County and the DOE should consider establishment of water conservation programs. These programs could include incentives to encourage installation of low-flow showers and toilets and using native

and drought-resistant plants in landscaping. LANL might evaluate industrial processes to determine where water conservation measures could be implemented.

- Explore implementation of a water resource best management practices project for current and future water systems, covering distribution system water audits, leak detection, and repair.
- Explore means to identify where new production wells and delivery infrastructure would be required to meet demand associated with residential, industrial, and commercial development scenarios. Also include wells and services that would be reduced as a result of transferring land uses to cultural preservation scenarios. Also conduct a detailed study on the regional groundwater quality and quantity.
- The DOE should consider proceeding with the installation of the proposed new 115-kilovolt power line to enhance the reliability of the electrical transmission to the Los Alamos power supply pool. At present, the regional power system (northern and northeastern New Mexico) is at full use capacity, and additional power would not be delivered to the local system even if the new 115-kilovolt line were installed. The DOE and the County should consider other options for electrical power, such as local generation. Both the DOE and the County should consider implementing further energy conservation measures. These measures might include installation of "intelligent" heating ventilation and air conditioning control systems, use of energy-efficient light bulbs, and reduction in power use by shutting off appliances, computers, and lights not in use.
- The predicted shortage of wastewater treatment capacity at the Bayo Wastewater Treatment Plant may be addressed with the proposed new treatment plant. The new plant would be built near the Bayo Wastewater Treatment Plant and would have a higher capacity and chemical treatment capability. It is not expected that the anticipated developments would achieve full buildout before the new plant is in operation. However, water conservation efforts implemented by the County should decrease the production of wastewater sent to the existing plant.
- Los Alamos County is in the process of establishing a new landfill. A site has been selected near Ojo Caliente, and the landfill is expected to be in operation within 3 to 5 years. The minimum predicted life of the existing landfill is 5.6 years if the anticipated growth of the County and LANL is realized. Should the new landfill's construction schedule slip, the existing landfill may reach capacity before the new landfill is completed. To avoid this, the possibility of diverting more solid waste to various recycling organizations should be explored. For example, diversion of construction rubble could increase the life of the landfill by several years.

16.4.4 Noise

The following potential mitigation measures to noise and vibration impacts were identified:

- Explore means to control construction noises including restricting most construction activities to normal daytime periods. Other means involve phasing demolition, construction, and remodeling activities.

- Explore means to control traffic noises through the use of berms/sound walls, vegetation buffer areas, building configurations, and other site planning tools.

16.4.5 Visual Resources

The potential mitigation measures to visual resources impacts were that local jurisdictions could explore improving the visual quality of tracts through incorporating regional based design guidelines. These guidelines would contain a set of principles and detailed design guidance for the physical development and redevelopment of sites. The guidance could include specifics such as building massing, facades, color palettes, and building orientation and entries. Where decommissioning, demolition, or environmental restoration is planned, actions could be taken to restore the area to its approximate natural condition by backfilling, reducing side slopes, applying topsoil, reseeding, and establishing plant growth.

16.4.6 Socioeconomics

The potential mitigation measure to socioeconomic impacts was to explore means to address the economic self-sufficiency needs of the receiving parties.

16.4.7 Ecological Resources

The following potential mitigation measures to ecological resources impacts were identified:

- Explore means to prevent the inadvertent electrocution of raptors where new above-ground electric lines are installed. Transmission and distribution lines should be constructed in accordance with standards outlined in the publication *Suggested Practices for Raptor Protection on Power Lines* (RRF 1996). The right-of-way holder should assume the burden and expense of proving that pole designs not shown in this publication are "raptor safe." A raptor expert could provide such proof.
- Explore means to manage trash and food items in closed containers to reduce attractiveness to opportunistic predators such as ravens, coyotes, and bears.
- Explore means to reduce the impacts of dogs and cats on other animals.
- Explore means to apply the planned Natural Resource Management Plan to transferred lands to control the quality of existing ecological resources.
- Explore the use of LANL's Threatened and Endangered Species Habitat Management Plan for guidance on the continued management of threatened and endangered species on transferred lands.
- Explore whether detailed surveys for the presence or absence of threatened and endangered species and sensitive species, as well as migratory bird nests could be conducted at sites prior to commencing activities that could result in ground disturbance or destruction. If any of these species were encountered at a site, avoidance measures could be implemented. Such measures could include scheduling the activities outside of the breeding season and transplanting populations to another location. Migratory bird nests and birds occupying those nests, which could be affected by the activity, would be removed in accordance with the *Migratory Bird Treaty Act* permit from the USFWS.
- Explore methods necessary for careful siting and design of new construction and minimizing losses of mature trees and special habitats.

- Explore means to avoid the removal of native vegetation within the riparian corridor(s) during demolition, earth moving, construction, habitat restoration, and trail-building activities. Consider the establishment of a permanent 50-foot (18-meter) wide restricted access buffer zone to protect surface water corridors. Locate all staging areas in already disturbed sites. A qualified biologist could develop a detailed habitat restoration plan for development activities. These plans, to be prepared by the project applicant prior to construction should specify all activities necessary to restore the drainage with minimal erosion and should be supervised by restoration specialists. If vegetation removal were required, project developers could confer with municipal, Pueblo, and State officials regarding the type of vegetation to be removed, the extent of removal, and corresponding revegetation mitigations.
- Explore means to limit impacts when a more site-specific plan is presented to the appropriate jurisdiction (for instance, requiring tree removal permits).

16.4.8 Cultural Resources

The following measures to mitigate potential direct and indirect impacts to cultural resources were identified:

- Explore means to minimize potential impacts to cultural resources by modifying development plans for the subject tracts so that direct disturbance or introduction of elements out of character with the resource or traditional practices are avoided. Ensure that protections for cultural resources from public access are in place and that development does not increase erosion of archaeological resources.
- Minimize impacts to cultural resources by preparing tract-specific Historic Properties Treatment Plans that include provisions for a data recovery program for NRHP-eligible archaeological resources that cannot be avoided, an appropriate level of documentation of historic buildings, any mitigations considered for TCPs, procedures for avoiding and monitoring resource impacts during construction, and a discovery plan for resources observed during construction.

16.4.9 Geology and Soils

The following potential mitigation measures to geology and soils resources impacts were identified:

- Explore means to implement recommend seismic upgrades to reduce life safety risks associated with structural failures for a moderate-probability earthquake. In addition, any existing structures identified for retention for future use should be evaluated in detail to determine the cost effectiveness of seismic upgrades.
- Explore the benefits of using grading permits approved by local authorities for site preparation work involving more than 5 cubic yards (3.8 cubic meters) or slopes greater than 20 percent.

16.4.10 Water Resources

The following potential mitigation measures to water resources impacts were identified:

- Explore means to reduce surface water quantity and improve surface water quality diverted by drainage structures

associated with site development. Infiltration basins and erosion control best management practices during construction are examples of such means.

- Map the 100- and 500-year floodplains and restrict development within these areas.
- Explore conducting water resources studies involving introduction of new waste streams into aquifers and watersheds, increases in the amount of automotive chemicals from vehicles in stormwater runoff, and pending legal conflicts with water rights.

16.4.11 Air Resources

The following potential mitigation measures to air resources impacts were identified:

- Explore techniques to control dust during demolition, construction, and renovation activities, including using mowing rather than discing for weed control; seeding and watering inactive portions of construction sites; minimizing the area disturbed by clearing, earthmoving, or excavation; and restricting site clearing, grading, etc. during periods of sustained strong winds.
- Explore the development of processes to measure and control the emissions of chemical pollutants in industrial and commercial development areas.

16.4.11.1 Global Climate Change

No potential mitigation measures were identified for global climate change.

16.4.12 Human Health

The potential mitigation measures to human health impacts were to explore identifying health and safety buffer zones around LANL operations for the protection of the public from both operational and accident exposures to hazardous or radioactive substances in air, water, or soil.

16.4.13 Environmental Justice

The potential mitigation measure to environmental justice impacts was to explore means to ensure continued access of the low-income and minority users of subsistence and traditional resources to those resources.